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LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and improve the character of the service rendered to the public.

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TREASURER.

GEORGE P. MCKAY, Cleveland.

COUNSEL.

HARVEY D. GOULDER, Cleveland.

LAKE CARRIERS' ASSOCIATION MEETING.

The Lake Carriers' Association met on Tuesday in the banquet room of the Hollenden hotel, Cleveland, and took under consideration the matter of the grain bill of lading. The members came to but one conclusion in this regard, which was to embody a detention clause. The matter of incorporating a shortage clause was left over for another year, as there is such a diversity of opinion on the subject. They adopted a coal bill of lading and also decided that goods delivered to a special consignee is to be considered as a good delivery. They further decided to appoint a committee to try to secure a reduction of dock rates on ore, the committee to be announced when the chair has selected the members.

All these matters were not arrived at without a long discussion. The members went in session at 11 o'clock and adjourned at 6:30 o'clock in the evening. The grain bill of lading was the first matter discussed. The executive committee designated at the Buffalo meeting to take this matter especially in charge made a report which was simply that after a careful consideration of the matters contained the members could not agree upon any particular report, and therefore submitted the question to the association. When this report was rendered a communication was read from the Elevator Association, of Buffalo, in which its members acceded to all the demands of the vesselmen regarding detention and the matter of unloading at other elevators when specific ones were not obtainable, but asked that this matter be not incorporated in the bill of lading. This they backed with the word of the elevator men that all should be fulfilled. They also said that a board of control had been appointed to see that these provisions were lived up to.

The communication also mentioned that the commercial organizations of Buffalo were willing to act with proper parties appointed by the elevator people and the vesselmen, as a board of arbitration to which all disputes might be submitted. This question was discussed and favorably received, but it seemed to the vesselmen that if the elevator people were willing to accede to their wishes there could be no objections to incorporating the clauses in the bill of lading, which would insure them against the return of abuses for all time to come.

The detention clause caused the most discussion, as it was generally conceded that an effort to incorporate a shortage clause would meet with disaster and would not now be acceptable even to the larger vessel owners.

Mr. Firth, the president of the meeting, demurred to the effort to incorporate a detention clause, saying it would work against the interests of the shippers. He spoke chiefly of the export consignments of grain, saying that it is the custom of shippers to secure the lake and the ocean rate in advance and then to secure from the railroads a through rate when Boston was used as an export point. He said if there were a detention with a demurrage clause attached this would be impossible, as the railroads would not grant the through rates under those conditions. He also pointed out the fact, as did others, that if this detention clause was put in the vessel owners could not be sure of the co-operation of the lake lines which are connected with railroads, as the latter would be influenced by the roads with which they are connected. This was thought to be a feature fraught with a great deal of danger to the success of the undertaking. All these ideas were outweighed by the one idea of avoiding having the vessels used as a storehouse without proper compensation being given to the vessel owner.

When the coal bill of lading was brought up there was a disposition to make a distinction between the handling of hard and soft coal. The report of the committee on this suggested that the shippers of soft coal be allowed 36 and those of hard coal 24 hours in which to furnish a dock at which coal could be unloaded, after which a demurrage of 5 cents a ton should be charged for each 24 hours the boat was held without a dock. There was but one change made in this recommendation, and then the same was adopted by the association. The change was that both cargoes should be treated alike and each is to be given 36 hours in which to furnish a dock, after which the demurrage will go into effect. This resolution was adopted and with it another providing that the secretary should submit a copy of the bill of lading to the various vessel owners of the lakes for their approval.

The question of the ore dock charges was brought up by Captain Davidson, who asked that a committee be appointed to secure a reduction of them. This brought out a lengthy discussion, in which it was plainly shown that the vessel men think the advance is an imposition, especially after they took the contracts for handling ore on last year's rates, not anticipating an advance. However much they disliked the situation, they admitted that there was but one thing to do this year, which was to submit, as the thing seems to have passed beyond their control. This will be remedied at the next annual meeting, when an effort will be made to have most of these charges assessed on the ore instead of on the vessel, and a part of them on the railroad. The meeting closed by giving a rising vote of thanks to President Firth for his excellent efforts in behalf of the Association.

SUBMARINE BOATS.

The attention of the authorities has been directed to the apparently successful trials made in France with the Gustav Zade, and it is probable that the matter of submarine boats will soon appear before the Board of Naval Construction, the annual appropriation bill permitting the construction of two submarine boats of the Holland design. The reports of a number of experts on the operation of the Holland have been received by the Department, some of which are quite favorable, but it is still contended that further advancement should be made before steps are taken to authorize an additional number of these boats.

In recent experiments with the new French submarine boat Morse some interesting and novel facts have been brought to light in connection with this type of craft. It is found that a vessel completely submerged, as is the case with the several vessels constructed for the French Navy, and supported by the water, as in the case of an ordinary craft, acts pretty much as a balloon suspended in the air. Her center of gravity is below the center of buoyancy, and is practically hung up to it. A long, cigar-shaped vessel, like the Morse, is very much like a see-saw suspended by its center. Its center of gravity was found of unexpected ease of displacement owing to the large relative weight of crew, fuel, torpedos and other material likely to be moved, and as a result but little was necessary to make her capsize through 90 degrees in the plane of her longitudinal section. The firing of a torpedo, the loss of fuel consumed, movement of the crew, or even partially filled water tanks, would be quite sufficient to send her down by the stern or by the head, a movement which would necessarily be accelerated by the action of the propeller if it was in operation. It was found almost impossible to steer this vessel with any degree of accuracy between perpendiculars. The controlling engineer never knows for a moment when the bow of his craft is going to stick in the mud or when to expect a sudden emergence into the air. Taken altogether the future of the submerged torpedo boat is not a particularly bright one.

RULES GOVERNING THE ELIGIBILITY OF NAVAL GRADUATES TO THE UNITED STATES REVENUE CUTTER SERVICE.

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
WASHINGTON, D. C., April 1, 1899.

The following rules governing the eligibility of graduates of the United States Naval Academy to the position of third lieutenant in the United States Revenue Cutter Service, are hereby promulgated for the information of all concerned:

(1) The candidate shall be a graduate of the six-year course at the United States Naval Academy, to-wit: Four years at the academy, and two years afloat before final graduation.

(2) The certificate of final graduation, or an authenticated copy thereof from the Naval Academy, shall be considered a sufficient proof of the professional qualifications of the applicant for the position of third lieutenant in the United States Revenue Cutter Service.

(3) The applicant shall file with his certificate of final graduation evidence as to his moral character and standing, and the occupations pursued and the positions held by him since leaving the naval service; also, an authenticated statement of the reason or reasons for his having left the naval service.

(4) Each candidate shall undergo a rigid examination by a board of medical officers of the Marine-Hospital Service, to determine his physical fitness for the position.

(5) The age of a candidate at the time of such examination shall not exceed 30 years. L. J. GAGE, Secretary.

Approved: WILLIAM MCKINLEY.

DISASTERS AND THE LOAD LINE.

"The recent hurricane weather on the Atlantic and the consequent losses to shipping," says a dispatch from London, "have called attention to the Board of Trade's action in abolishing the winter North Atlantic mark for vessels over 330 feet long, and an agitation for its re-establishment has begun. It appears that since January 20 nine steamers, of 26,754 tons, of £529,000 in value and having 300 persons on board, have been lost. It is added that they were all classed 100 A at Lloyd's, but it is believed they were exempt from the winter North Atlantic mark.

"Mrs. Plimsoll, widow of the late Samuel Plimsoll, the member of Parliament who did so much for shipping and in behalf of seamen that he was known as 'The Seamen's Friend,' has taken the matter up as undoing her husband's work. In a letter to the newspapeas she characterizes the abolition of the winter North Atlantic mark as 'a cruel wrong,' for the winter mark was acknowledged to represent the minimum line of safety, and says: 'Did people but realize the terrible danger of our brave men and the misery and desolation of the women and children, surely protests would be made throughout the country.' "

NEWS AROUND THE LAKES.

CHICAGO.

Special Correspondence to The Marine Record.

The steam barge Charles Reitz has arrived at Benton Harbor from Manistee with a cargo of lumber, the first of the season to reach the east coast of Lake Michigan.

The old excursion steamer Chief Justice Waite, tired of waiting for the opening of navigation, went to the bottom of the river on Saturday. She had been repeatedly condemned.

Capt. B. G. Cameron, who has had charge of the Kenosha life-saving station for 20 years, has received word from Washington that he is to be presented with a medal for bravery during his long period of service.

The Goodrich steamer Atlanta this week opened the season on the Chicago-Grand Harbor run. In Muskegon Lake ice twelve inches thick was encountered, and dynamite was used to clear a way through the heavy pack.

The Lake Michigan & Lake Superior Transit Company announces that from June 22 to September 13 the steamship Manitou will make tri-weekly trips between Chicago and Mackinac, connectihg with the American and Canadian lines at the latter place.

Exception is being taken to an article in last week's issue of the RECORD that reflected somewhat on Mr. McDonald regarding insurance taken out on the W. H. Barnum. The suit against the companies he represented is for $3,500 only and not for the larger a ount of $12,000 as stated, which was taken up by other agents for foreign insurance companies.

Captain J. G. Warren, Corps of Engineers, of Milwaukee, has asked proposals for buying a tug to tend dredges on harbors west shore of Lake Michigan. Notice says information will be given by Captain Warren, Major W. L. Marshall, Chicago, Major C. B. Sears, Duluth, Colonel J. A. Smith, Cleveland, Lieut. Col. G. J. Lydecker, Detroit, Major W. W. Symons, Buffalo.

Chicago public and private elevators on Monday contained 31,754,000 bushels of grain, as follows: Wheat, 7,889,000 bushels; corn, 17,653,000 bushels; oats, 4,100,00 bushels; rye, 591,000 bushels; barley, 1,611,000 bushels. The amount of grain afloat has increased to 6,110,000 bushels, of which 215,000 bushels is wheat, 3,500,000 bushels corn, 2,082,000 bushels oats, 147,000 bushels rye, and 166,000 bushels barley.

It is learned that Capt. R. C. Brittain has traded his interest in the steamers H. A. Root and J. C. Suit to A. R. Colborn for the latter's interest in the steamer Frank Woods, and has sold the Frank Woods to a Benton Harbor company. This reduces his steamboat interests to the McVea, J. C. Crouse and Martel, and George Arnold of Mackinac is a prospective purchaser of the last-named craft, but whether the deal will be closed or not seems problematical just now, in view of other offers being made and taken under consideration.

The owners of the vessels of the Chicago lumber fleet are looking forward to the best season for a half dozen years. The era of good times which has come to other branches of the lake marine promises to extend even to the "lumber hooker." Affairs are as quiet as February as yet, and dealers are not asking for any boats for first trips, but such action would be a little premature when the condition of ice at lumber ports is considered. The lumber fleet is cut down fully one-eighth in capacity from last season. A number of craft were lost in the fall storms. Many of the larger steam craft and schooners are being attracted into other channels by the demand for carriers for steel rails and billets. The condition of the ice is shortening the season of navigation, and the stock of lumber on the docks is being used up steadily at the same time. The demand promises to be excellent during the summer, and the owners of the good craft are feeling hopeful. They are not spending any money to fit out, however, for the end of last season left the average owner decidedly poor, and all fixing up must be paid for out of the earnings of the first freights.

Shippers here are not inclined to give in, in regard to grain shortages. They will fight that point out most stubbornly, and unless the season opens with a big boom vessel owners will find it difficult to carry their point. The present custom is for vessels to have the benefit of grain which overruns and pay for the grain when there is not as much unloaded as is called for in the bill of lading. Taking the season through, it is said that the shortage in grain loaded and unloaded is remarkably small, and is not worth making a fight about. Now and then vessels are caught for shortages amounting to several hundred dollars, and it is to be relieved from that risk that vesselmen have made a stand against the prevailing custom. The shippers have opposed any change on the ground that a bill of lading is negotiable and that to be accepted there must be no chance whatever. As much grain must be delivered as the bill of lading calls for, also it is not merchantable. As insurance policies are attached to bills of lading which pass from shippers to banks, and the foreign purchasers, it would seem as if vesselmen had the worst of the argument. They are certainly not united in their fight with the shippers, some of them feeling that it is unreasonable to relieve the carrier of all responsibility for the grain on board their craft, at the same time shortage and detention at port of discharge are two features which have no right or reason to be saddled on to the vessel owner and these features must in time right themselves.

DETROIT.

Special Correspondence to The Marine Record.

David C. Sutherland has been appointed second assistant light-house keeper at Manitou, Mich.

Capt. J. W. Westcott and Alex. Ruelle have written to the Postmaster-General to protest against the government awarding the contract for delivering mail to C. F. Bielman, claiming that they were not allowed to bid for the work.

W. H. McFall, who was clerk of the steamer Kirby last season, will become manager of the Pennsylvania-Buffalo-Erie route this summer. James Barro, who has been connected with the C. & B. line, will take Mr. McFall's place on the Kirby.

Elevators at the head of Lake Superior now contain 20,303,540 bushels of grain, divided as follows: Wheat, $10,669,437 bushels; corn, 5,568,900 bushels; oats, 2,080,000 bushels; rye, 305,204 bushels; barley, 485,497 bushels; flaxseed, 1,193,918 bushels.

Secretary of the Treasury Spaulding has reduced to a nominal sum a fine of $100 imposed by the collector of customs at this port on the steamer S. C. Reynolds for failure to surrender her navigation license. The evidence showed that there was no willful intent to violate the law.

The life-saving crews at all stations on Lake Michigan went into service at 12 o'clock Tuesday night. It has been customary for the crews to be placed in commission at noon on April 1, but recently an order was sent out from Washington that the stations would open at midnight on April 4.

A Washington dispatch says that ten more gas buoys have been assigned to the lakes, eight of them going to the districts in charge of Commander Kennedy, of Detroit, and two to the Lake Michigan district, the headquarters of which are at Chicago. It is probable that the eight buoys assigned to Commander Kennedy will be used almost entirely on the Sault River at points where they will displace private lights.

The officers of the Star Line steamers at last see a prospect of the season of navigation opening, and have slated the Arundell to make the first trip to Port Huron Thursday at noon. General Manager C. F. Bielman says he has received word that the river was open to-day from Port Huron as far down as Algonac. The south wind is having the right effect on the blockade and is driving the ice from the river into Lake Huron. If the Arundell gets through Thursday, she will make regular trips thereafter, leaving her dock at the foot of Griswold street daily at 2;30 p. m. standard time.

John Stevenson, the vessel agent, who has just returned from a trip to Buffalo, reports that vesselmen of that city are not looking for the opening of navigation before May 1. "There's considerable ice down around Buffalo way yet," said Mr. Stevenson, "and there's still enormous quantities drifting about in Lake Erie, going from point to point with the changing winds. A steady east wind would drive it up into the head of the lake again, and I am afraid Cleveland will have the same trouble she had last week if this should occur." Mr. Stevenson himself, however, is making preparations for the opening about April 20, and the work of fitting out the boats under his management has been commenced.

Capt. Frank D. Cole, son of the late Capt. Darius Cole, and associated for many years with his father in the vessel business, died on Wednesday morning at his residence, 662 Trumbull avenue. His demise was due to a complication of diseases, which had made him an invalid for the last six years. He suffered especially with inflammatory rheumatism. He was confined to his bed for five weeks. Capt. Cole was 45 years of age. He was born in Bay City, and lived there until removing to Detroit in 1893. From that time his health prevented his active participation in business, but he continued his identification with the Star-Cole line company, of which he was vice-president. He is survived by a widow, four sons and an equal number of daughters.

C. A. Macdonald, the well known Chicago marine insurance man, held a meeting here a few days ago. The purpose of Mr. Macdonald's visit was to forward his scheme for the organization of the vessel owners of the lakes into an insurance union for the purpose of issuing policies upon their own vessels. Letters of invitation to most of the vessel owners in the city to be present at a meeting to be held at the Hotel Cadillac had preceded Mr. Macdonald. But Detroit vesselmen appeared to be rather chary of the idea, for 11 o'clock had come and gone before any one was on hand to consult with Mr. Macdonald. Even then there were only half a dozen of them present, and under Mr. Macdonald's tutelage they went into secret session in one of the parlors of the hotel. The plan proposed by Mr. Macdonald contemplates the union of vessel owners all over the Great Lakes. At a meeting recently held in Cleveland the matter was thorughly discussed and most favorably received. It is probable that another meeting will be held there in the near future and possibly a definite organization effected. The move originated in the belief of many vesselmen, especially owners of the class of vessels known to the insurance men as A2, that the rates demanded by the stock insurance companies are excessive, and that it would be more advantageous from every standpoint to organize a mutual insurance association. Mr. Macdonald may be slightly ahead of the present way of thinking of the owners of vessels, but the time is near at hand when not only one but several mutual insurance clubs will be in force on the lakes.

BUFFALO.

Special Correspondence to The Marine Record.

The new coal car dump at Erie has been strengthened and fitted out for the 100-ton coal cars and will be in constant use this season. The ore dock will be practically clear at the opening of navigation, a condition that has not existed before in twenty years.

The Northern Steamship Company has issued a handsome folder for the coming season, giving the sailing dates, rates of fare and a great deal of other information concerning its palace steamers, North West and North Land, and their route. A notable feature is a fine bird's-eye view of the entire chain of the lakes, showing the course of the company's steamers between Buffalo and Duluth. The first sailing from Buffalo is appointed for Tuesday, June 13th.

There is a bill in the legislature that seeks to give Erastus Wiman the privilege of introducing large corporation interests on the canal, as was contemplated by the Parshall bill of two years ago, which failed to pass. The boatmen are fighting this bill as they did the other, but it may pass for all that. There are many who would be perfectly willing to see corporations step in and save the canal, if that is necessary, for it does not look as though the individual boatmen stood any chance of doing it.

A certificate of the incorporation of the Buffalo & Grand Island Ferry Company, capitalized at $9,000, and organized for the purpose of running a ferry from the present terminus of the Best road in the town of Tonawanda across Niagara river to the ferry dock on lot No. 5 at the head of Grand Island, was filed with the County Clerk this morning. The stock of the concern is divided into 90 shares of the value of $100 each. The directors for the first year are Daniel H. Person, William Person and Frank P. Person, of Buffalo.

Proposed abandonment of the Lackawanna lake line, stated positively in local papers, and copied by all the marine publications up the lakes, seems to have been a trifle premature. It was given out yesterday, says the Buffalo Courier, that the Lackawanna line would be conducted the coming season as heretofore, and that no arrangements had been made with the Anchor Line to handle the Lackawanna's west-bound freight. It is understood, however, that the Anchor Line will resume its arrangement with the West Shore Railroad, and freight from the East, westbound, will be carried by its boats.

The steamer P. J. Ralph and consort Harold arrived at Port Colborne late last season laden with corn from Chicago for Prescott. Owing to ice in the canal they were unable to proceed and were forced to go into winter quarters. Shortly after their arrival it was found that the Harold had some water in her hold. This necessitated a discharge of cargo and resulted in the discovery that 819 bushels of the corn had been wet. After the damaged grain had been removed the dry grain was put back into the vessel. It is now reported that the consignment of the vessels has been changed to Buffalo, to which port they will proceed as soon as the ice disappears.

This year's Inland Lloyd's Vessel Register will be marked by the substitution of the gross for the net tonnage figures heretofore given. The reason for this change is that the gross tonnage figures give a better idea of the size of the vessels than do the net. An examination of the valuations show that there has been a general reduction on wooden vessels, while the valuations on steel vessels have not been disturbed. On wooden steamers the reduction ranges from 10 to 20 per cent., and on wooden barges and schooners it amounts to about 25 per cent. The changes in ratings are, of course, based upon the reports of condition made by the inspectors engaged for that service, and in this connection it may be said that a more competent corps has never before been placed in the field.

The schedule of rates to govern rail-and-lake and lake-and-rail traffic during the coming season, which was arranged at a meeting of the lake line and rail line officials in New York recently, is to be adjusted so as to do away with the proposed advance in the fifth and sixth classes. Under the proposed change the rates will be the same as last season, and that is said to have been brought about by the attitude of the Great Northern. That company, through Vice President Miller, has notified the lake lines of its decision not to abide by the decision of the conference which established the schedule of rates, claiming the advance was not justified and intimating that the company would, if necessary, put in rates of its own construction. The matter was brought to the attention of the trunk lines and it was decided to yield to the attitude of the Great Northern. So the rates will be changed to conform to the policy of that company.

NINE persons out of ten—yes, nine hundred and ninety-nine out of every thousand—if asked how long it takes the earth to turn once on its axis would answer 24 hours, and to the question, "How many times does it turn on its axis in the course of a year?" the answer would be 365¼ times. Both answers are wrong. It requires but 23 hours and 56 minutes for the earth to make the complete turn, and it makes 365¼ turns during the year. The error springs from a wrong idea of what is meant by a day. The day is not, as is commonly supposed, the time required by the earth to make one turn on its axis, but the interval between two successive passages of the sun across the meridian—that is to say, the time which elapses after the sun is seen exactly south in its diurnal course through the heavens before it is again seen in that position.—Exchange.

PORT HURON.

Special Correspondence to The Marine Record.

The tug Runnels is fitted out in Black river.

Capt. Frank Danger, ex-inspector of hulls, has taken up his residence on Lapeer avenue.

Capt. M. A. Budd and Wilber Boynton have left for Milwaukee to fit out the steamer Niagara.

The steam barge Lindsay was towed to Marine City this week. The boat will be made a single decker.

Ed. J. Kendall has fitted up a suite of rooms for the season of navigation where he will transact his marine business.

Mr. Elisha Langell has just completed two fine row boats for the Kendall Marine Rep. Co. to use on the river. They are the finest boats he has ever built.

The Lorenzo Dimick will be as good as new when she is launched. About all the boats are doing what necessary repairs they need before starting out.

Capt. Joe Inches has laid out $1,000 on the steamer Wyoming at Algonac and will come to Port Huron to go in dry dock. She will contine in the lumber and cedar trade between Oscoda and Ohio ports.

On Thursday the masters and pilots played a game of outdoor baseball with the marine engineers at Pine Grove park. The game resulted in a score of 31 to 26 in favor of the M. and P's. A return game is to be played.

Mr. Kendall reports the ice in Lake Huron as far as the eye can see from a height of 30 feet above the water. The steamer Mary could not go down the river on account of the river being full of ice and very heavy at that.

Arthur Armson, who for several years past has sailed one of the Jenks Ship Building Co.'s boats, will remain ashore this season and will become foreman of the machine shops at the Phœnix Iron Works. It is understood that the Jenks Ship Building Co. has decided to locate its steel plant on the Bunce farm. An engine and two boilers are now being constructed to be used at the plant. The question of right of way and railway facilities, it is expected, will be decided upon before long.

The members of Huronia Marine Engineers' Beneficial Association have been assigned as follows for the coming season: Chief engineers.—Arthur Armson, Phœnix Iron Works; W. P. Boynton, Niagara; G. H. Bowen, M. A. McGregor; Irvin G. Buzzard, Maggie Duncan; Thos. Birch, James Fisk, Jr.; R. B. Buchanan, Geo. F. Williams; James H. Countryman, Avon; Harvey Depuy, Pawnee; Robert Dorman, J. C. Ford; William Doran, superintendent Grand Trunk Water System, London, Ont.; Edward Egan, Oglebay; Fred P. Fitzgerald, J. C. Lockwood; Peter Finney, Inman Tug Line, Duluth; Edward Harvey, G. A. Mason; John Hogan, Kittie M. Forbes; George Ingham, Alcona; Dennis Kerrigan, Ferry Stauber; John Kinirie, Port Huron Ferry Line; Gilbert McLelland, C. D. Thompson; E. M. Murdock, Normandie; S. G. Merrill, Detroit Ferry Line; Edward Moore, Barker Tug Line, West Superior; Eph. J. Moore, D. Leuty; Peter Mullen, Business; James M. Oag, Osceola; L. C. Purdy, Geo. E. Brockway; Edward Parry, Mark Hopkins; Gus Rogers, Cormorant; John D. Riley, John Mitchell; J. A. Southgate, Rhoda Stewart; C. E. Sylvester, Canisteo; H. Smith, Argonaut; Thomas Treleaven, Victory; W. G. Thorne, Germanic; Thomas Welch, Centurion; A. P. Williams, Elfinmere; A. J. Wilson, Chili, Jos. C. Watson, O. O. Carpenter; Herman Wolfe, Thos. R. Scott; David McDonald, Ontario.

ESCANABA.

Special Correspondence to The Marine Record.

Fitting out work has been commenced on the steamers Lotus and City of New Baltimore.

Workmen are busily engaged in making several improvements and repairs to the coal docks.

I received a letter from Green Bay and they say that Fox river is open in spots below the elevator.

As far as heard the Goodrich boats and those of the Hart line will continue to land at the Stephenson dock.

The ice is turning black and has melted about 4 inches this week; a large crack is reported on the other side of the bay.

The I. Stephenson dock is to be in charge of John Stephenson of this port to succeed L. Perrin, who had charge last season.

The tug A. J. Wright, of Sturgeon Bay has been raised after five days' work. She was sunk while trying to reach the steamer Joy which burned at the canal last year.

The report that the Ann Arbor railroad car ferry would attempt the passage through Death's Door has been contradicted and it is now thought likely that she will go through by way of the Sturgeon Bay canal.

Report has it that the Ann Arbor Co. are not going to wait for the breakup but will try and get the No. 2 over to Menominee via the door. They have an unusually large amount of freight at the above port.

The parties that were at Port Huron in quest of the purchase of a tug for wreeking purposes were the Escanaba Towing and Wrecking Co. of this city. The tug in view at that time was the Vigilant, but the owner wanted too much. The company have several other tugs in sight bnt have not made any purchases as yet.

CLEVELAND.

Special Correspondence to The Marine Record.

The pockets of the ore docks at Two Harbors are now being filled.

The Northwestern Fuel Co. will this season have 800 feet of dock frontage at Green Bay.

The schooner Maumee Valley was chartered at Toledo, yesterday, for coal to Wallaceburg at 35 cents.

General Passenger Agent Herman, of the C. & B. line has notified all agents of a cut in the berth and stateroom rate between Cleveland and Buffalo.

The whaleback steamers Thomson and Hoyt, which arrived from Lorain, Tuesday night, will be docked as soon as they discharge their ore cargoes.

Barge 127 reached Ashtabula on Wednesday, from this port, in tow of the tug Sunol, to load coal. This is the first arrival this season at Ashtabula aside from tugs.

The steamer Roumania and schooner J. J. Barlum, laying up at Ashtabula, has received quite extensive repairs during the winter. The repairs included part new deck, frames and a general overhauling.

Boilermakers from the Globe ship yard have completed the repairing of the boilers of the steamers Corona, Corsica and Cambria of the Mutual fleet, laid up at Ashtabula, and they are now in first class order.

The display of wind signals on Lakes Ontario, Erie, Huron and Michigan will be resumed on April 15, 1899. The display of wind signals on Lake Superior will be resumed upon the opening of the locks at Sault Ste. Marie.

Inquiry for vessels at Duluth, of late, has been confined to corn, and some charters are reported at 2½ cents. Should the wheat market come to a shipping basis it is predicted by vesselmen that a 3-cent rate will result. The Lake Ontario rate has been fixed at 4½ cents, vessel paying canal tolls.

Messrs. W. H. Mack and J. C. Gilchrist returned from the east yesterday. Mr. Gilchrist visited Newport News and New York and Mr. Mack spent several weeks in Boston. They both have made arrangements to operate their vessels on the coast. Mr. Mack said that some of the vessels that were sent to the coast last fall are in bad shape. One of the vessels, which was in fair shape when she left the lakes, was sold for $3,600.

The steamer Rappahannock was chartered Wednesday for soft coal, Buffalo to Milwaukee, at 30 cents, and another vessel was placed to load here for Milwaukee at the same figure. The name of the boat was not reported. Local owners as a rule are holding for 40 cents, but shippers claim that the rate has been established at 30 cents. A large number of boats have been chartered at the going rates and some of them have been loaded. No season contracts have been reported.

At the meeting of the executive committee of the Lake Carriers' Association on Modday the following resolution, offered by Mr. Bradley and seconded by Mr. Goulder, was adopted: "Resolved that it is with sincere regret this meeting learns of the death of Capt. McLeod, who, for many years has been so closely identified with the lake interests. We extend to his family our deep sympathy in their great bereavement and take this opportunity of expressing our high appreciation of his honesty and integrity of character.

The charge for unloading iron ore from vessels has been advanced from 14 to 16 cents per ton at all Ohio ports. The larger part of the raise goes to the men discharging the cargo. There can be no question but the men earn the money, but the dock proprietors and not the owners of vessels ought to stand the increase of pay. This season in particular vessels were chartered for the season on the understanding that trimming and discharging rates would be as formerly so that vessels carrying ore for the season will be at a loss according to the amount of the increase in discharging rates.

FLOTSAM, JETSAM AND LAGAN.

The name of the old schooner Cheney Ames has been changed to Grace G. Gribbie.

John D. Sloan, of St. Paul, has been appointed supervising inspector of vessels for the fifth district, comprising Minnesota, Wisconsin and Iowa.

The ice in the bay at Menominee is rotting, but is still unmoved. The members of Vessel Loaders' Union No. 68 of the International Longshoremen's Association, have elected officers for the ensuing year and named the rate for loading boats at 50 cents an hour, which was the rate at the close of navigation last year.

On Friday last the Lake Michigan Carferry Transportation Co. caused a libel to be filed against the steamer Parks Foster to secure the payment of a damage claim amounting to $500. On November 4 last, just outside of Milwaukee harbor, the Parks Foster ran between the tug S. M. Fischer and her car-carrying barge, breaking the steel towing cable and doing other damage. Carelessness on the part of the steamer is alleged by the libelant.

Indications point to the opening of the Straits of Mackinaw later this year than for twenty-five years past. The solid ice extends out a considerable distance into Lake Michigan and Lake Huron, and the continued cold weather leads vesselmen to predict that navigation will not open before April 25 or May 1. Last season the Straits were open on April 2, and the first vessel from the lower lakes to reach Milwaukee was the Bulgaria on April 5.

The West Superior steamer Arthur Orr, which has been in the dry dock of the American Steel Barge Co. all winter, undergoing repairs, will be ready to leave the dock in about a week, providing the ice conditions in the upper end of the pocket permit. Just as soon as the Orr is taken out and the Tampa can be moved from dock No. 1, Duluth, to the shipyards, the latter vessel will go in for temporary repairs, and will later be taken down the lakes to some yard that has more time to put in on her for about $30,000 worth of repairs.

RICHELIEU & ONTARIO NAVIGATION CO.

The most varied in scenery, the most exciting and richest in historic association, of any on the continent. The distance covered is divided into three connecting lines, namely: Toronto and Montreal line, Montreal and Quebec line, and Quebec and Saguenay line, of splendid steamers all owned by the same company. A magnificent new double tier steel steamer, the Toronto, has this year been added to the fleet, to rnn on the Toronto-Montreal line, length 278 feet, breadth 62 feet, speed 20 miles per hour.

Passing through the Thousand Islands and Rapids of the St. Lawrence, by daylight, the Toronto-Montreal tourist line of the R. & O. Navigation Co. will leave Toronto at 2:30 p. m. The new steamer Toronto will call at Charlotte (port of Rochester), going east, on Tuesday, Thursday and Saturday, and going west, on Sunday, Wednesday and Friday. The other steamers will call at Port Hope and Cobourg on the alternate days. Returning steamers leave Montreal 10.00 a. m.

From June 1st to 13th, will leave Toronto and Montreal, Tuesday, Thursday and Saturday only.

From June 14th to September 15th, daily except Sunday.

From September 16th to 30th, Tuesday, Thursday and Saturday only.

From July 10th to August 28th, steamers will leave Kingston, Clayton and Gananoque daily.

APPOINTMENTS OF MASTERS AND ENGINEERS.

MESSRS. MITCHELL & CO., Cleveland, O.—Steamer H. S. Holden, master, C. B. Galton; engineer, William Fetting. Lagonda, master, R. C. Jackson; engineer, Irwin Francombe. J. J. McWilliams, master, S. Stratton; engineer, F. B. Parker. M. A. Hanna, master, M. P. Parsons; engineer, Henry Graves. W. H. Gratwick, No. 2, master, B. D. Townsend; engineer, Peter Lavely. John Mitchell, master, Alex. Begg; engineer, J. D. Riley. R. L. Fryer, master, F. D. Galton; engineer, Gus Gey. W. F. Sauber, master, H. A. Stewart; engineer, William Fritz. George T. Hope, master, H. H. Townsend; engineer, L. Minnie. Ed. Smith, No. 1, master, C. D. Miller; engineer, C. E. Coon. Schooner J. C. Fitzpatrick, master, T. T. Tallaksen. Angus Smith, master, J. T. Lennon. Barge Troy, master, G. Nelson.

LAKE ONTARIO & BAY OF QUINTE STEAMBOAT CO., Kingston, Ont.—Steamer Hero, master, Wm. Bloomfield; engineer, Robt. McEwan. North King, master, John Jarrell; engineer, O. J. Hickey.

THE RICHELIEU & ONTARIO NAVIGATION CO., Montreal, Can.—Steamer Quebec, master, L. O. Boucher; engineer, F. Gendrom. Montreal, master, L. St. Louis; engineer, F. X. Hamelin. Canada, master, J. Dugal; engineer, E. Denis. Saguenay, master, C. Lapierre. Carolina, master, G. Riverin; engineer, M. Latulippe. Three Rivers, master, F. St. Louis; engineer, J. Matte. Berthier, master, C. Gouin; engineer, E. Arcaud. Terrebonne, master, F. E. Gouin; engineer, G. Gendron. Chambly, master, Geo. Paulch; engineer, C. Gendron. Laprairie, master, P. McLean; engineer, N. Beaudin. Cultivateur, master, O. Raymond; engineer, H. Noel. Longueuil, master, F. Jodoin; engineer, N. Beaudet. Hochelaga, master, H. Maudeville; engineer, F. Chapdelaine. Hosanna, master, D. Mongeau; engineer, E. Gendron. Mouche-a-Feu, master, —. Crepeau; engineer, P. Boucher. Sorel, master, —. Berthiaume; engineer, —. Beaucage. River-du-Loup, master, —. Faubert; engineer, L. Goudin. Toronto, master, H. Esford; engineer, Wm. Black. Spartan, master, H. P. Grange, Algerian, master, D. Mills. Bohemian, master, A. Dunlop; engineer, A. R. Milne. Hamilton, master, A. J. Baker; engineer, L. Marshall. Corsican, master, John McGraw; engineer, William Parker.

CANADIAN TRANSIT CO.—Steamer Briton, master, James B. Watts; engineer, W. R. Donaldson. German, master, D. Carrier; engineer, H. J. Gilbo. Grecian, master, William Baxter; engineer, Thomas Kelly. Saxon, master, Alex. Birnie; engineer, George E. Averill. Roman, master, A. J. Greenlay; engineer, S. A. Wells.

MR. G. W. PARKER, Marine City, Mich.—Steam barge D. F. Rose, master, C. M. Saph; engineer, Hubert Manion. Barge Buckeye State, master, William D. Angell. Boscobel, master, A. T. Young, Jr. Marine City, master, A. T. Young, Sr.

THE combination of Great Lake shipyards seems to be practically completed with a capital stock of $30,000,000, and includes the Globe Iron Works, the Cleveland Ship Building Co., the Chicago Ship Building Co., the Milwaukee Dry-Dock Co., the Detroit Dry-Dock Co., and the American Steel Barge Co. The name of the new concern will be the American Ship Building Co., and the owners of the plants selling out agree to take 50 per cent. of the amount to be paid for them in stock.

A NOTED LIFE SAVER.

The accompanying illustration is that of Capt. Andrews, a noted Canadian life saver who has received honors from one end of the continent to the other.

Capt. Andrews' exploits in saving life date from the year 1869, and from that time he has always been ready to risk his own life to save the lives of others.

The danger incurred in plunging overboard is very great. Many expert swimmers shrink from it. Andrews has encountered this risk under almost every variety of circumstances. He has followed the drowning under rafts of timber, under vessels at anchor or in docks, from great heights, and often to the bottom in great depths of water, and, what is very remarkable, always successfully.

The first deed of bravery occurred in his native city. When only sixteen years old he rescued a lad of eleven years of age, who, while playing on a raft of timber accidentally fell into the bay. Fortunately, Andrews, who was writing in an office upstairs, heard the cry, and taking in the situation at once, on reaching the wharf plunged in with all his clothes on and rescued the boy, who had sunk twice before assistance arrived.

For this and other acts of gallantry Captain Andrews was awarded the gold life-saving medal of the first class, with clasps.

This beautiful gold medal is oval in shape, bearing on its obverse side the coat of arms of the city of Kingston, with its Latin motto, "*Pro Rege, Lege et Grege*," the free translation of which is "For King, Law and Country." On the opposite side is the following inscription: "Presented to W. D. Andrews for his bravery in saving life at Kingston, July 23rd, 1869." The medal is surrounded by a wreath of laurel, the emblem of victory, and surmounted by a crown, the symbol of authority, and attached to a heavy clasp of frosted gold, bearing the word "Kingston" in block letters of burnished gold, and suspended by a cardinal silk ribbon.

From this time on Capt. Andrews kept up his life-saving record and he is to-day one of the most prominent life savers of the continent. Lately, however, he has become blind owing to exposure in his early days, but he still manages to keep to windward, for which perhaps, a little credit is due to his Masonic friendship and standing.

BUREAU REPORT.

The Bureau of Navigation, Treasury Department, is advised that all vessels, Portuguese or foreign, steam or sail, entering the ports of Mozambique, will be subject to tonnage dues as follows, under a recent decree by the Portuguese government:

These dues shall be paid at the first port in the province at which any said vessel shall call, and said vessels, having once paid these tonnage dues, may proceed to other ports in this province without having to pay any further tonnage dues at any such ports.

SCHEDULE OF CHARGES.

Sailing vessels, in foreign trade, per registered ton, 150 reis; steam vessels, in foreign trade, "tramps," per registered ton, 50 reis; steam vessels, in foreign trade, being regular liners, and coming from a Portuguese port, per registered ton, 25 reis; vessels engaged in the coastwise trade shall pay, once each year, a tax of 150 reis per registered ton.

The following vessels are exempt from tonnage dues:

Men-of-war, of any nationality; yachts, belonging to a legally organized yacht club; vessels exempt by reason of treaties with foreign powers, or of contracts with the Portuguese government; tugs and fishing vessels of less than 20 tons register; vessels in distress, or calling for orders, and not receiving or landing cargo; steam vessels calling for coal or provisions; vessels bringing shipwrecked people, or prisoners; vessels entering to trans-ship cargo from other vessels that may be in distress or condemned; vessels bringing specie.

THE steamer Chief Justice Waite, which has spent her declining years in the excursion business at Chicago, lies sunk to her promenade deck in the lake basin at the foot of Washington street in that city. It is doubtful whether she will again be placed in commission. The Waite came out in 1874.

MARITIME LAW.

THE TRANSFER NO. 3.

District Court, S. D., New York, February 6, 1899.

COLLISION—OVERTAKING BOATS—BREAKDOWN—ACCIDENT WITHOUT FAULT.—The tug M. overtook and passed Transfer No. 3 with her heavy tow coming down the East river off Pier 16. The M. after passing in ahead of No. 3, and when about 500 feet in advance of her, broke her valve stem so that she became disabled. When soon afterward the breakdown was discovered, danger signals were given to the tow behind, and shouts, and the tug was turned to go into the docks, but her way was gone, and collision ensued; on contradictory evidence, held, that No. 3 had no notice that the M. was disabled until the boats were too near to avoid collision in the flood tide, and that the collision was an accident without fault.

In Admiralty. Collision.

Brown, District Judge. On the 7th day of May, 1898, Transfer No. 3, belonging to the New Haven Railroad Company, coming down the East river against the flood tide, with a large car float about 250 feet long on each side of her and from 200 to 400 feet outside of the line of the New York piers, ran into the stern of the libelant's tug H. D. Mould, doing some damage for which the above libel was filed. The tug had previously been astern of Transfer No. 3 and was coming down at the rate of about seven miles an hour, having no tow. She overhauled and passed the Transfer and her tow to the eastward, and after passing them hauled in front of the tow until, when off Tenth street, and being then several hundred feet ahead of the tow, her valve stem suddenly broke, by which she was disabled, as her propeller could not be turned either forward or backward. A minute or two elapsed before the nature of the trouble was discovered by the engineer, when he reported to the captain, who then gave several alarm signals, and shouts were also given from the stern of the tug to the tow behind. No. 3 reversed, but not in time to avoid collision.

It is evident that the charge of negligence against No. 3 in not backing sooner, depends wholly on the time when she had notice that the tug was in trouble, and must be avoided. The witnesses for No. 3 say that this was not until she was off Twelfth street, which was about 250 feet above the place of collision, which was off Eleventh street. If that is correct, it is plain there was insufficient time for the Transfer to stop, as the tug was drifting up river with the tide.

CAPT. ANDREWS.
A Noted Canadian Life Saver.

The witnesses for the Mould on the other hand, testify in a general way that several danger signals were sounded when No. 3 and her tow were off somewhere from Fourteenth to Sixteenth street. I have no doubt that this is an error. The collision took place after dark at about half past seven, and the precise position of the tow above would not naturally be very exactly located; and the testimony of the masters of the Mould and No. 3 is, that the Mould passed the float off Sixteenth street; so that at the time when the Mould broke down off Tenth street, No. 3 could not have been above Twelfth or Thirteenth street, where the latter's witnesses testify she was.

Other circumstances still further corroborate the conclusion that No. 3 had no notice that anything was the matter with the Mould until the tow was within 200 or 300 feet of her. The order of events is testified to very naturally by the Mould's witnesses. Ratel says:

"The first engineer shouted to the captain to put his wheel over and sheer into the dock; that the engine was broken down. Of course I ran out of the pilot house back aft and commenced to shout."

The master says:

"Just as quick as I found out that there was something wrong with the engine, that it was broken down, I put my wheel hard over and tried to go to the dock, but my way was gone."

As the Mould was going at the rate of seven or eight miles an hour through the water when she broke down, plainly there must have been quite a little interval before her way was gone; and this agrees with the time necessary for the previous examination made by the engineer before he reported the breakdown to the captain, and consequently before there was any shouting or signaling. But the captain still further states that his attention was not called to No. 3 and her tow until he saw her backing 50 or 100 feet away, and that, he says, was the time when they first commenced to halloo. The lookout on the starboard float of No. 3 stated that this was the first notice he had of trouble with the Mould, and that she gave no alarm signals until about that time; and there is no probability that alarm signals were given by the captain of the Mould to the tow behind before his attention was called to it; and from the above circumstances and the Mould's own testimony, it is evident that No. 3 was then pretty near, probably 200 feet off, instead of 50 or 100, but too near then to avoid collision.

It is plain from the master's testimony that he did not know that the Mould was disabled until "her way was about stopped;" because it was then that the engineer reported and told him to port his wheel in order to run in toward the docks; but her way being nearly gone, she could do no more than turn a little to starboard, still remaining in the path of No. 3. Being previously ahead of No. 3 and going at a speed of seven or eight knots through the water, it would have been very easy for the Mould under a port wheel to go out of No. 3's path long before the time of collision if her master had known that anything was the matter and that porting was necessary. It is evident that he did not know this until No. 3 was near; and it would be absurd to hold that No. 3 was bound to take measures to avoid collision or had knowledge of any need of doing so, any earlier than the Mould herself. My conclusion is that neither knew the real difficulty in time to avoid collision; and that it is to be set down therefore to pure accident, and not to any fault of No. 3's.

The libel is therefore dismissed, but without costs.

THE German shipyards have won the second place in point of output, being surpassed by Great Britain alone. According to statistics published by the Germanic Lloyd, no less than 528 vessels were on the stocks in German private yards in 1898, the total gross measurement of which was 546 461 registered tons. Of these 333, of 208,835 tons gross, were finished and delivered in the course of the year, and of the 333 delivered 309 were merchant ships, aggregating 181,102 tons gross, 97 of them being large ocean steamers, while the sailing ships only numbered seven.

THE Jenks Ship Building Co., which has established a steel ship building plant at Port Huron, will build a steel freight steamer 240 feet long, 43 feet beam and 27 feet depth.

OIL FOR FUEL.

Rear-Admiral Melville, chief of the bureau of steam engineering, makes the announcement that the United States Navy Department intends, on the recommendation of the bureau of steam engineering, to fit one of the torpedo boats with oil fuel apparatus, adding that if the bureau's anticipations of complete success be realized all American torpedo boats intended for operations on the American coast will probably be fitted for burning liquid fuel. "On the United States coast," he says, "representatives of the great oil companies give the assurance that fuel oil can be supplied in large quantities for less than 3 cent per gallon."

Taking up the subject of boilers he says: "In boiler design it has already been shown how progress has occurred, and it may be said that the cylindrical boiler is to-day practically as perfect as it can be made, and that, while it is still the type almost universally used in merchant steamers, the water tube boiler has practically superseded it for naval vessels, and seems destined to do so in the merchant service. From many points of view there are numerous makes of water tube boilers in use to-day which are entirely satisfactory, but thus far it has seemed that the boilers which were most satisfactory on the score of lightness and economy, left something to be desired from the standpoint of facility of overhauling, cleaning and renewal of parts.

On the other hand, most of the straight tube boilers, which are the easiest to clean and to overhaul or repair, have been heavier, and, at least as installed, have had the great objection of numerous units for the same power. This last is a very serious objection, as it means an enormous amount of work for the boiler attendants, even with automatic feed service, and also a greatly increased number of fittings and mountings.

"The outlook for the future with regard to design of machinery would seem to be that the type of engine is likely to remain the same as at present, inasmuch as the progress in recent years has been almost entirely in matter of detail, unless, indeed, the steam turbine should cause a complete revolution, and of this there does not, at present, seem a strong probability. For the boilers, in the writer's opinion, it is almost certain that the water tube boiler will entirely supersede the cylindrical. As to exactly which form of water tube boiler will become the common type, it is very difficult to say. The writer's own opinion inclines toward the view that the water tube boiler which will survive, will have straight tubes of moderate diameter. It seems almost certain that heated draught and feed heaters will be essential features of this water tube boiler, whatever the exact form of the latter may be."

In an article in the March number of the Engineering Magazine he says: "So far as can now be seen there does not seem any probability of immediate changes so radical as the sudden jump in pressures from the compound to the triple expansion engine, the great increase in rotational speeds, and the abandonment of the cylindrical boiler for the water tube boiler, which have already taken place. The demand will continue for higher speeds, and this means the further reduction of weight per unit of power. There will also be a steady effort for an increase of economy. These desiderata will give designers scope for the exercise of their talents. The need is obvious enough of such an organization among the engineers, mechanics and firemen in our merchant service who are accustomed to marine machinery and have the sea habit, as will enable the government, on occasion, to man the engine and fire-rooms with these men, who will need only a short training to make them feel at home and render highly efficient service."

THE steamer Belgica, with an Antartic exploration party, is reported to have arrived at Pauta Arenas, Patagonia, on the homeward journey. The last previous communication from this party was sent December 30, 1897. The voyage is reported to have been a complete success; mnch new land and open water to the far South being dicovered. A cable dispatch states that all are well and none have been lost by disease although men were lost by accident. The vessel was ice-bound for 2 months.

A MODERN AIR PUMP.

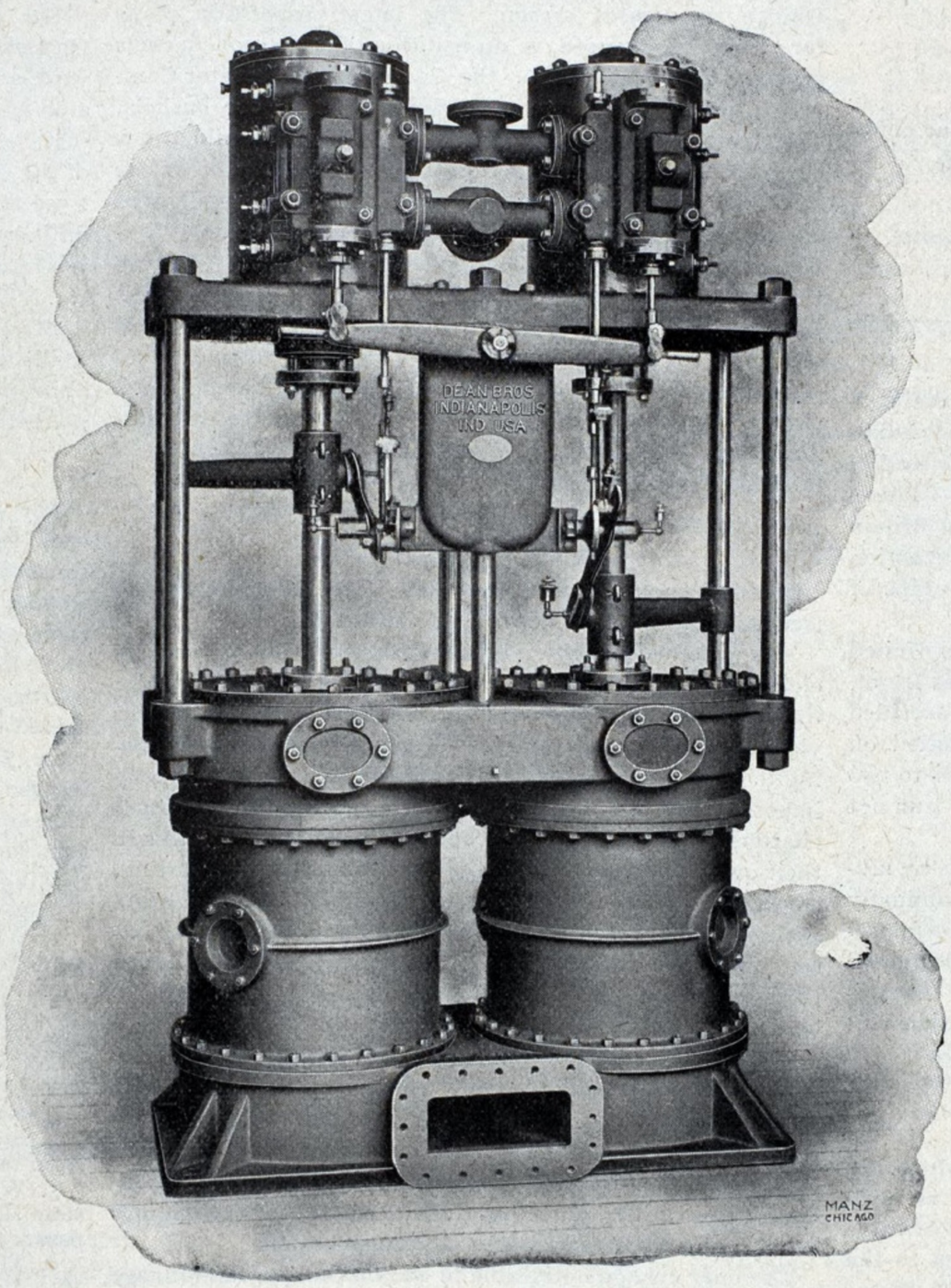
[ILLUSTRATED.]

The accompanying cut shows Dean Brothers' Indianapolis, Ind., twin cylinder air pump with patent steam valve gear. This mechanism so controls the pistons that they will always move synchronously in opposite directions and invariably work to the full limit of their stroke. Should one piston move faster than the other and therefore reach the limit of its stroke in advance of the other, it will wait until the second piston reaches the opposite limit of its stroke, when both pistons will simultaneously reverse their motion.

The necessity of a beam connecting the two piston rods is obviated, and the friction of the beam and its numerous connections avoided. Where a beam is used, there must be cross heads, slides, pins, joints and other complications that not only produce friction but are also in danger of breaking or derangement.

Dean Bros.' twin cylinder air pump may be operated in three ways:

1. The two pumps may be operated in conjunction as above stated.



DEAN BROS.' TWIN CYLINDER AIR PUMP.

2. By detaching the lever that connects the chest pistons the pumps may be run independently.

3. By disconnecting both the chest piston lever, and the steam valve rod of one pump, its operation will be stopped while the other pump will continue to operate.

If from any cause one pump is disabled the other one may be run until repairs can be made.

This is the only twin cylinder air pump made that is convertable into separate pumps. The marine engineer will appreciate this feature as the stoppage of an air pump at sea is a serious matter.

The pump cylinders are of bronze or bronze-lined. The pistons, valve seats, piston rods, valve stems and valve plates are of bronze.

The piston rods are separable at cross heads. The cross heads are of steel. The steam cylinders and pump cylinders are connected by six heavy steel stretcher rods. Adjusting valves are fitted to steam cylinders for controlling motion of pistons. The valve gear is provided with patent lever adjustment by which the length of stroke of pistons may at any time be changed even while pump is running.

STEAM SHIP WORK.

According to the H. E. Moss & Co. circular from Liverpool, it is learned that the prosperity of the shipping trade continued up to the end of last year, and shipowners have every reason to be satisfied with the results obtained by their steamers in 1898; and although there is just now a set-back in freights in certain directions, the general opinion is that there will be an improvement in the autumn, if not sooner, and that the present year will on the whole be a profitable one for owners. That this is really the opinion of shipowners is proved by the demand which exists at the present time for the purchase of both new and second-hand boats, many of which are changing hands at very excellent prices. There is also a bill now under consideration of the French legislature for granting a bounty, though in a modified degree, to steamers of not exceeding ten years of age.

As regards shipbuilding, 1898 was a record year, the total output by builders in the United Kingdom (exclusive of warships) being 1,367,570 gross tons, exceeding the year 1889 by 158,209 tons. The amount of new tonnage ordered and to be built makes it certain that shipbuilders and engineers will be kept fully employed during the present year. Builders' prices have increased about 15 per cent. during the past 12 months, or about 30 per cent. from the lowest point, and prices to-day are about the same as they were in 1890. As there is so much work in hand, and as the cost of production has increased so greatly, it is fair to surmise that builders are not likely during the present year to accept lower prices. Steel platesare now costing nearly £7 10s. per ton, an increase of fully £2 10s. per ton from the lowest point. About 20 per cent. of the new tonnage has been built for foreigh owners, Denmark having been the largest foreign customer of the British shipbuilders. Continental shipbuilders produced during 1898 about 260,000 gross tons of merchant shipping. Germany is here our most formidable competitor, both as regards quantity and prices. 153,147 gross tons of merchant shipping were built in Germany during 1898, while France produced 67,160 tons and Italy 26,530 tons.

Of second-hand vessels, the most tonnage has been bought by America (U. S.); then follows Norway, and then Germany; the total second-hand tonnage sold to foreigners being nearly 600,000 gross tons. The price realized during 1898 for second-hand vessels were very good, and showed an increase fully in proportion to the increase on the prices of new boats.

The production of sailing vessels in the United Kingdom dwindled down in 1898 to 17 ships of 4,252 tons, as against in 1892 169 vessels of 268,-594 tons. In France, however, owing to the bounty law, large sailing ships are still built; 19 sailing ships amounting to 30,500 tons, were launched during 1898, and of these 12 were 2,000 tons or upwards. There was during the year a good demand, chiefly from foreign buyers, for second-hand steel and iron sailing ships, and many changed hands at increased prices. Wooden vessels, unless new, are not asked for, and can only be sold at very low prices.

A very striking feature of the year under review was the increase in the size of the steamers built; also the very large extent to which the regular steamship lines have supplied, and are supplying, themselves with large carrying steamers, 9,000 to 12,000 tons and 11 to 13 knots speed.

LACK OF FORESIGHT.

A remarkable lack of foresight has been exhibited by some one regarding the condition of Thunder Bay river for the coming season. During the big gale of last October the sands washed up at the mouth, forming a bar, with only nine or ten feet of water on. After several days' work the steamers and harbor tugs dredged a narrow channel on one side of the entrance, so that a boat drawing 11 or 12 feet of water could get in or out. It is not thought this condition will have changed any since then, and as no money has been appropriated and no signs of any for doing work at this harbor, vessels will have lots of difficulty if they load to full capacity.

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CRUISER FOR THE LAKES.

A Washington dispatch conveys the intelligence that it is a virtual certainty that the new cruiser for the Great Lakes will now be built. Diplomacy has about cleared the road of the treaty obstacle that stood in the way, Sir Julian Pauncefote having intimated to Secretary Hay that Great Britain will consent to amend or annul the Rush-Bagot convention in such a way as to permit the building of armed ships of modern types.

This agreement was made at the request of the United States in 1817 between the British minister, Charles Bagot, and Richard Rush, Acting Secretary of State. It provided that the naval force of each nation should be limited on Lake Ontario to one ship, and on the upper lakes to two ships, not exceeding 100 tons and armed with one gun not exceeding in size an eighteen-pounder.

The agreement has been violated by both nations by mutual consent, and the old steamer Michigan, now nominally guarding the upper lakes for this country, has a displacement of 365 tons and carries six six-pound rapid-fire and two one-pound rapid-fire rifles and two Gatlings. Sir Julian's agreement to modify the antiquated convention will permit the Navy Department to build a modern ship.

THE CRAIG SHIPBUILDING YARDS.

The shipbuilding firm of John Craig & Son at Toledo has secured the contract for the building of two vessels as a direct result of the new order of things. The first of these two vessels, which, when completed, are to be taken to the Atlantic, to engage in the trade between the United States and Porto Rico, will be launched probably this week.

The vessel is of rather peculiar design, as is necessitated by the half coasting, half ocean trade in which she will be engaged in plying between the United States and the island. The new vessel is to be christened the Mae. She is owned by Miller, Bull & Knowlton, Hanover Building, New York City, and is the second vessel to be built by the Craigs, and two other vessels designed for the same trade which are now building at Wilmington, Del. These last two vessels will be named the Ponce and the San Juan.

The Mae is to be for the freight trade exclusively. She will be first-class in every particular and rated A1 in the Record of American and Foreign Shipping, published by the American Bureau of Shipping, New York. She is of steel and her tonnage is 2,100 gross and 1,200 net; length over all, 263 feet; beam, 42 feet; molded depth, 25 feet; speed, between 10 and 11 knots per hour when loaded; consumption, about 20 tons per 24 hours, wooden between decks laid throughout; mean draft, fully loaded, 19 feet; dead weight capacity, about 3,000 tons; cubic capacity, about 130,000 feet for cargo; steam steering gear; steam windlass; four Lidgerwood hoisting engines and connections; large donkey boiler; water ballast in cellular double bottom; four watertight steel bulkheads; triple-expansion, surface condensing engines, with cylinders of 22, 37 and 61 inches diameter with 36 inches stroke; steam pressure, 175 pounds; two steel boilers (Scotch type), 12 feet 6 inches by 12 feet; steam starting and reversing gear. The Mae will be completed and taken through the St. Lawrence canals and river to the coast in the early summer.

The second steamer will be named Porto Rico and will be for mail, freight and passenger service around the island of Porto Rico. She will be 220 feet long, 32 feet beam and about 21 feet depth of hold, with 8 feet between decks. Her speed is to be 12 to 13 knots. She will be finely fitted up in every particular for about 30 first-class and 25 second-class passengers, with electric lights throughout and every modern convenience.

ELEVATOR CAPACITY AT THE HEAD OF THE LAKES.

There will be a large increase in the elevator capacity at Duluth the present season. The latest proposition, plans for which are prepared, is an addition of 1,500,000 bushels capacity to elevator H, of the Consolidated Elevator Company, giving this house a capacity of 2,750,000 bushels. The Great Northern has definitely decided to build a new 8,000,000-bushel house, giving them a capacity of 65,000 bushels. Of the numerous other new elevators being figured on, probably the most definite is that of the Chicago O'Neil Grain Co., which, in connection with the Albert Dickinson Co., of Chicago, are stated to have bought a site on Rice's Point for a large barley and flax house. Three or four small clearing houses are in contemplation also, and some of them are sure to develop. Two grain hospitals with a combined storage capacity of 150,000 bushels are to be erected at West Superior. They will be provided with machines capable of cleaning 6,000,000 bushels of wheat in a season.

EASTERN FREIGHTS.

Messrs Funch, Edye & Co., New York, in their weekly freight report to the RECORD state as follows:

The wretched condition of our freight market for grain is eloquently set forth by the fact that of four fixtures under this heading, only three are for full grain cargo, the other yielding option of part cargo of general merchandise. Owing to cessation of enquiry for grain vessels, it is practically impossible at the moment to name a rate for near or future charters, shippers with still open contracts having this in their own hands. Berth freights have suffered in proportion, as the seaboard is gradually becoming denuded of grain without any appreciable movement from the interior to offset shipments. Slightly increased offerings of cotton in the Gulf and the Atlantic ports have enabled some charters to be effected there at rates reflecting the dullness of the markets on our Northern coast. Some fixtures are likewise reported for timber from the Gulf, where rates have been fairly well maintained for prompt boats, but, pressing wants having been provided for, we must look for some concession there shortly. Charters for deals have continued on a moderate scale at 42s. 6d. from the St. Lawrence; the enquiry for steamers for special trades continues limited.

The only change noticeable in our market for sail tonnage is a slightly declining tendency in rates for petroleum in cases to the East, a vessel having been chartered for Java on the basis of 20c. Other ports are still quoted at rates previously dealt in, but there is less anxiety to secure tonnage. The movements in other lines presents absolutely nothing of special interest.

MILWAUKEE MARCH SHIPMENTS.

Aross-the-lake shipments out of Milwaukee during the month of March embrace 242,215 barrels of flour, 30,335 bushels of wheat, 878,375 bushels of oats, 132,936 bushels of corn, 65,309 bushels of barley, 15,165 bushels of rye, and 11,669 tons of mill feed. Of this grand total the Grand Haven line steamers carried 150,614 barrels of flour, 25,000 bushels of wheat, 770,250 bushels of oats, 41,000 bushels of barley, and 3,717 tons of feed; the Ludington steamers 84,260 barrels of flour, 78,500 bushels of oats, 53,025 bushels of corn, 560 bushels of rye, and 7,647 tons of feed; the car ferry Muskegon 7,341 barrels of flour, 5,335 bushels of wheat, 29,625 bushels of oats, 79,911 bushels of corn, 24,309 bushels of barley, 14,605 bushels of rye, and 305 tons of feed.

SHIPBUILDING.

The steam yacht Josephine, building for Mr. P. A. B. Widener, N. Y. Y. C., by Neafie & Levy, of Philadelphia, is so far finished in hull that she shortly will be launched. The yacht will contain all the modern improvements and be up to date in every particular. Her water line length is 216 feet; length over all, 257 feet; beam, 30 feet 3 inches; depth, 19 feet 6 inches, and draught, 14 feet 6 inches.

The New York Ship Building Co., to operate on the Delaware river near Philadelphia, capital stock $100,000, has been chartered. The Directors are Henry G. Morse, Wilmington, Del.; Andrew W. Mellon, Pittsburg; E. K. Morse, Pittsburg; James E. Brown, Pittsburg; Charles S. Hall, Wilmington, Del.

One of the steamship lines to feel the benefits of the recent increase in trade and transportation, is the Lynn and Boston Steamship Company, which has found it necessary to build a new steamer for the service. Bids have been called for the construction of a wooden vessel 140 feet long, 28 feet beam, and 10½ feet depth of hold, with a draft of eight feet. She will be equipped with compound engines and will have a speed of 14 knots.

The order for two 10,000-ton freight steamships for the Hawaiian service, which was received by the Roach shipyard, at Chester last week, will benefit steel workers. Senator W. C. Sproul, vice president of Roach's shipyard, has just closed an agreement with General Manager McCauley, of the Central Iron and Steel Company, Harrisburg, Pa., for 1,500 tons of plates for one of the ships. This company's mills have furnished a great deal of material for the Roach works, as well as for other shipbuilding plants in the country. The two ships will be the largest cargo steamers ever built in the United States, and, next to the St. Paul and St. Louis, of the American Line, will be the largest ships ever built on this side of the water. Over 6,000 tons of steel plates, angles, castings and forgings will be used.

GREAT LAKES PRIZES.

The winners of Great Lakes Register prizes ($200), Chicago Nautical School, were as follows: Capt. Sam'l Thurston and Capt. H. Pedersen tied for the first prize and agreed to take one-half of the first and second prize, namely, $30 each. Capt. John F. Hansen received third prize of $20; Mate Ed. S. Pickell, received first prize, $40; Mate James Martin received second prize, $20; Mate Mark Crowley received third prize, $20; Mate Ed. Kohnert received fourth prize, $20. Mr. Pickell had the highest average of all, beating the captains. The papers were examined by Capt. F. D. Herriman, of the Great Lakes Register. The school was very successful this winter, over 24 captains and mates attending.

Appended is a copy of the examination papers:

1. What are the errors a steam vessel on the lakes have to allow for? Define each.

2. You are assigned to a vessel which has no deviation card, first trip for you. Leave Chicago for Duluth 8 p. m., May 10, 1899. State what your duty would be; what you would do, and when, in order to reach your port of destination in safety and shortest time possible?

3. Name the different methods for determining deviation?

4. State briefly how you would work out an azimuth from tables.

5. What care should you take in placing a compass, and state the difference between a standard and steering compass?

6. The true course from Buffalo to Marblehead is W. S. W. Variation at Buffalo is 5 degrees Wly. Variation at Marblehead 0 degree 30′ Wly. Dev. ¾ pt. Ely. What is the magnetic course, also the compass course?

7. Explain the different kinds of deviation found in a vessel; state what it depends upon; also state if it will change on the lakes, if so, to what extent, and why?

8. You are heading NNE., wind blowing fresh from N. by E., fire breaks out forward on port side. What would you do?

9. State briefly how you would work a chart, also state the different methods by which you would plot your position by bearings?

10. You are enveloped in a fog, supposed to be near the coast, what would you do?

11. What is a barometer used for?

12. The barometer at sea level reads 29.98; what will be the corresponding reading of a barometer on Lake Michigan?

13. Wherein does a Mercator chart differ from a Polyconic, also state how your ship's track is represented on same, and why?

14. Name all instruments and publications necessary for the safe navigation of your vessel on the lakes?

THE ice in Sturgeon Bay is broken up and moving. The ice in Green Bay is wasting fast, and there are stretches of open water in many places.

ICE REPORT.

The Weather Bureau, Department of Agriculture, has issued the following ice report, which being unbiassed and official, will be found a valuable guide to the marine interests of the lakes.

Reports from the regular Weather Bureau stations and special wind signal stations on the Great Lakes received this date indicate that there is a large amount of ice in Lake Superior which ranges from 36 to 40 inches thick about the Islands and extends out as far as the eye can reach beyond Outer Island; the ice is solid at Marquette, where no water can be seen; at Grand Marais the ice is 23 inches thick and softening; at Whitefish Point the bay is solid, while large fields are drifting with the wind in the lake to the north of the point; at the "Soo" the ice is from 16 to 34 inches in thickness, but is beginning to soften, and it is thought that navigation will open about the 28th instant. In Lake Michigan there are some ice fields in the southern end, and at Michigan City this has packed across the mouth of the harbor; in Green Bay the ice is from 20 to 30 inches thick and at Menominee is softening some, but elsewhere is solid. In the northern portion of the lake to the Straits the ice is solid and ranges from 24 to 40 inches thick and covers a large area. In the Straits the ice is still solid and the present indications are that it will not break up before May 1st, although high winds and warm weather will advance the date. In Lake Huron there is considerable ice in the southern end which is congested at the mouth of the lake and a broad belt extends along the west side from Port Huron to Thunder Bay, where it is beginning to honeycomb; there is no ice in sight east of Middle and Thunder Bay Islands; Saginaw Bay has 20 inches of solid ice. Considerable ice is running in the St. Clair river, while the Detroit river is free of ice. In Lake Erie there are large fields of ice which move with the wind. The east end of the lake is covered with ice fields which extend from Buffalo to Erie and along the west end of the lake, except in and about the island passages. A large belt of ice from four to five miles in width has extended out from Cleveland during the past week, but it is moving out to-day under the influence of the high southerly winds. In Lake Ontario there is very little ice reported except at the east end where it is still solid; the St. Lawrence river is free from Cape St. Vincent to Ogdensburg.

The indications for the opening of navigation are that the ice at the critical points at the Straits and the "Soo" river will not open up much before May 1st.

SPECIAL REPORTS—LAKE SUPERIOR.

Bayfield, Wis., April 8.—The ice still remains solid in the bay and channel and will average from 30 to 34 inches in thickness. There is solid ice in the lake as far as one can see from the highest point of Outer Island.

Whitefish Point.—Ice two feet thick in the bay; a few miles above the point it moves back and forth with the wind within a mile of the shore; winter most severe for 20 years. Navigation not looked for before the first week in May.

Sault Ste. Marie—Ice ranges from 16 to 34 inches; character of the ice much changed in the past two weeks being now soft, indications are that navigation will open about the 28th.

LAKE MICHIGAN.

Menominee, Mich., April 8.—The ice in the harbor averages 18 inches and is full of air-holes. The prospects are that navigation will not be opened before May 1st.

Milwaukee, Wis., April 8.—The river and harbor at this port are, at the present time, entirely clear of ice. There is some soft, floating ice in the lake and with an east wind drifts to this shore, but is causing no interference with navigation. Boats are running regularly to Chicago and points on the Michigan shore. The prospects for the resumption of general navigation at an early date is not good, as the ice in the Straits is reported still solid and softening very slowly. Local vesselmen state, that even with favorable weather, navigation can not be resumed before April 25th.

Michigan City, Ind.—The harbor clear, considerable floe ice outside which prevents steamers entering. High southerly winds will drive it out.

Charlevoix, Mich.—Ice from 24 to 30 inches thick and still solid, with no evidence of breaking.

LAKE HURON.

A telegram from Mackinaw City received at 5 p. m. to-day states that the ice is softening very fast under the influence of the warm rain and does not look as though the ice would last ten days.

Cheboygan.—Ice in Straits from three to four feet thick; almost impossible for navigation to open before May 1st.

Alpena, Mich.—Thunder Bay is covered with ice as far as the eye can see; ice between Thunder Bay Island and mainland has softened and is becoming honey-combed; no ice to the east of the island.

Port Huron.—Large fields of heavy ice still cover lower Lake Huron; large quantities of heavy ice running down the river; navigation will probably open about April 25th.

LAKE ERIE.

Huron, Ohio, April 10—No ice in the lake off this port; fishing tugs are plying between this port and the Islands and Port Clinton. Navigation is open here so far as ice is concerned.

Lorain, Ohio, April 8.—There is no ice in the harbor but a large amount out in the lake. Two weeks ago the lake was clear of ice but it has since drifted in from the north shore. Present outlook is that it will be May 1st before navigation opens.

Cleveland, April 11.—Ice field driven off to-day by strong and warm southeast winds.

Fairport Harbor, Ohio, April 7.—There is no ice in the harbor but a large amount of ice in the lake at present which comes and goes with the wind. Navigation will probably open about the 20th inst.

Conneaut Harbor, Ohio, April 8.—There is a large amount of soft winrowed ice in the lake, off this port.

Erie, Pa., April 9.—A large ice field from 5 to 10 inches thick, covers Lake Erie in the vicinity of this station. Navigation will probably not open before April 21st.

Buffalo.—Ice fields extend as far as the eye can reach and from shore to shore, except in channel and about a mile beyond lighthouses; ice broken up considerably; with seasonable weather and heavy southwest winds navigation will open in about 10 days.

LAKE ONTARIO.

Oswego, N. Y., April 9.—There is no ice in the harbor or this part of the lake. Steamer St. Joseph arrived on April 2nd, opening navigation at this point.

OBITUARY.

CAPT. DONALD MCLEOD.

The funeral of Capt. Donald McLeod took place Wednesday afternoon at his late home, No. 103 Brookfield street Cleveland, the Rev. Mr. Jones officiating. The body was interred at Lake View Cemetery.

Although a citizen of Cleveland only five years, Captain McLeod was well known and equally as well appreciated by all lake men, many of whom attended his funeral. He was born on Prince Edward's Island sixty-four years ago. His wife and adopted daughter survive him. Capt. McLeod was for years an ocean and lake captain. He retired in 1871.

Capt. McLeod was a Knight Templar and a thirty-second-degree Mason. His initiation and first two degrees were received in Mt. Lebanon Lodge, No. 984, F. and A. M., London, England. The third degree was bestowed upon him in King Hiram Lodge, on Prince Edward's Island. The other degrees were acquired in various cities of the United States. He finally became a thirty-second-degree Mason in the Michigan Sovereign Consistory, at Detroit, in 1893.

CAPT. BRETT.

The body of Captain J. W. Brett was laid in its final resting place at Lake View Cemetery Monday afternoon. Funeral services were held in the late home of the captain, No. 532 Woodland avenue, Cleveland. Rev. Dr. L. A. Banks, of the First Methodist Episcopal Church officiated.

Capt. Brett was a pioneer of Cleveland and one of the oldest of lake captains, having sailed the lakes nearly forty years. He was eighty-two years of age at the time of his death.

His wife, Mrs. Eunice Brett, and two children survive him. The latter, Mrs. John Donaldson and Dickson Brett, of Buffalo, were in attendance at the funeral.

CAPT. ROSSITER.

Capt. John Rossiter, an old lake captain and a survivor of the Lady Elgin, died on Monday morning at his home, 306 Cass street, Milwaukee. The cause of his death was heart trouble. Mr. Rossiter was born in Wexford, Ireland, and came to this country in 1852, settling in Milwaukee. Mr. Rossiter is survived by four children—two sons and two daughters. The funeral will be held Thursday from St. John's Cathedral, of which the deceased was an active member.

THE WORLD'S SHIPBUILDING IN 1898.

Consul Metcalf sends from Newcastle-on-Tyne, under the date of Dec. 31, 1898, clipping from the Daily Journal of even date, showing the shipbuilding of the world during the year just closed. The article says, in part:

GREAT BRITAIN.

The shipbuilding for the last 18 years has been :

Year.	Total production reported, tons.
1881	1,000,000
1882	1,200,000
1883	1,250,000
1884	750,000
1885	540,422
1886	473,675
1887	578,668
1888	903,687
1889	1,332,889
1890	1,279,077
1891	1,209,904
1892	1,194,784
1893	878,000
1894	1,080,419
1895	1,074,890
1896	1,316,906
1897	1,095,895
1898	1,610,000

Our figures are now given in round numbers because part of the records give the size, and not the tonnage, and others give displacement tons, so that an estimate has to be made of these. If last year be excluded—the effect of the strike making that abnormal—it will be seen that the output has advanced since 1895; but many shipbuilders doubt whether the highest point has yet been reached. Still, the production is an enormous one. It is not only in excess by 500,000 tons of that for the previous year, but it exceeds by nearly 300,000 tons the year 1889, which has hitherto been the record year for the United Kingdon. A production of nearly 135,000 tons monthly for this country, and that production varied from a small yacht to a battleship, is an output that must be considered wonderful. A further fact that is still more surprising is that considerably more than half that production is from Blyth, the Tyne, the Wear, West Hartlepool, the Tees, and Whitby. The comparatively limited stretch of seacoast from the Tyne to the Tees, inclusive, gives half the tonnage built in the United Kingdom last year. The two chief centers are the northeast coast and the Clyde district.

There are fewer firms engaged in the northeastern district than in that of the Clyde, but they turned off the stocks more ships in the year, and, as the average tonnage of these ships was larger locally than on the Clyde, the total yield of the English district is very far above that of the Scotch. If we contrast the figures for the district for two years, we find that the Clyde district added about 126,000 tons this year to its production of last year; whilst the northeast coast added 290,000 tons.

Next comes the question of the builders who have contributed most to that vast output of the United Kingdom. It is usually found that the "blue ribbon of shipbuilding" varies between Belfast, the Tyne, and West Hartlepool. Messrs. W. Grey & Co., Messrs. Harland & Wolff, the Palmer Ship Building Co., and Russell & Co. are amongst those who have in different years contributed most to the output. For the present year the following is the position :

	Tons.
1. W. Gray & Co., West Hartlepool	72,323
2. C. S. Swan & Hunter, Wallsend	68,696
3. Hartland & Wolff, Belfast	67,905
4. Sir W. G. Armstrong, Whitworth & Co	54,397

The extent of the tonnage built by these great builders is enormous. It is attained in most cases by the inclusion of steamers of vast magnitude. Thus, at Belfast two steamers of over 12,000 tons figure in the returns; and the Tyne has one of close upon 10,000 tons from the Walsend yard that takes second place this year, whilst the firm that takes the premier place—Messrs. W. Grey & Co., of West Hartlepool—have no steamer of more than about 3,500 tons, but their enormous output is attained by the large number of 27 steamers—more than one each fortnight.

In the year, the cost of steamers has considerably advanced. To give an illustration of the advance, a year ago a cargo steamer of good size was contracted for at £33,500, and now an exactly similar vessel has been contracted for at a little over £37,000. The advance has been enforced by the higher cost of labor, by the higher price of engines, and by dearer plates and angles. A year ago steel plates were at about £5 5s. ($25.55) per ton; now the quotation is close upon £6 17s. 6d. ($33.46) per ton, whilst the price of steel angles has advanced correspondiugly. Indeed, one of the

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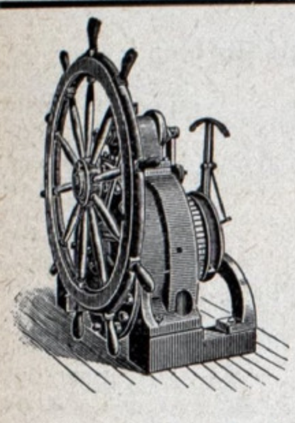

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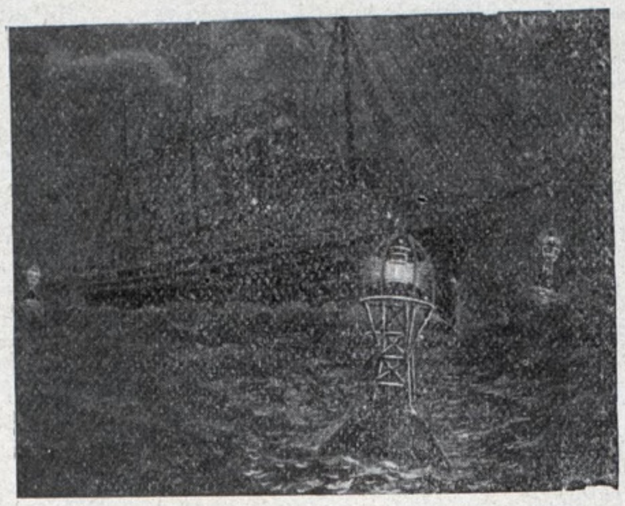

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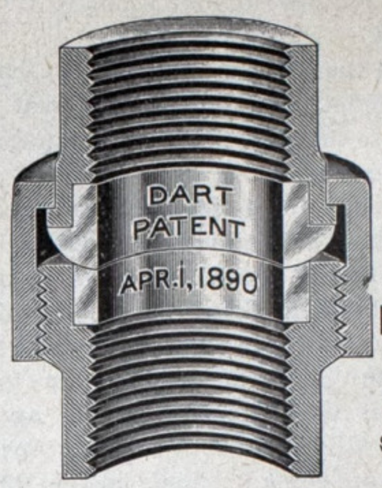

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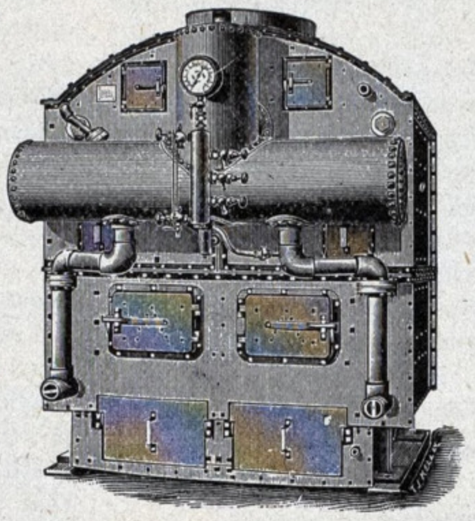

W. A. McGILLIS & CO.

DREDGING.

57 WADE BUILDING. CLEVELAND, OHIO.

chief shipbuilders puts the extent of the rise in steel plates a little more than this—at 35s. ($8.52) per ton on the year. Wages have risen nominally 5 per cent. but in reality the delay through the strike of the engineers, and at times the irregularity of working, has caused the cost to be much above the nominal amount of the advance. As it is, higher wages and materials make the quotation of a year ago—£6 5s. ($30.42) per ton for a 5,000-ton steamer—now fully £7 5s. ($35.28) per ton. It leads to a considerable appreciation of the cost of the steamer; and it, of course, entails the need for better freights to make it remunerative. It remains to be seen whether the advance has reached its height. Coal is becoming dearer, and this will react upon iron and steel, and it is possible that other items of the cost of production may in degree rise further. At present, the builders have full work for many months ahead, and thus there is rather the probability that for any additional orders that are forced on the market, higher prices may still have to be paid. It may be noted, in passing, that the advance in the cost of the engines has been fully concurrent with that of the advance in the cost of the hull.

FOREIGN.

We are able to illustrate, from the returns of foreign shipbuilders, the growth and extent and variety of the work of the builders abroad. It is impossible to give a full list of vessels built abroad. Time prevents the obtaining of lists from builders in the Far East; and some of the continental shipbuilders, including two of the largest in Germany, decline to furnish these lists. But the returns we give prove that in many lands there is increased building of ships—at first generally with British material, and then with material made in their own country. There is thus in shipbuilding an increasing international competition which will make itself most felt when trade is duller. We have many advantages in the competition. We have the greatest fleets, which will need replenishing from time to time. We are the largest producers of the "mild Siemen's steel," which is the metal preferred for shipbuilding; for, whilst 20 years ago we produced only 150,000 tons of mild steel ingots, now our production is over 2,600,000 tons yearly. Sir N. Barnaby's words as to war ships apply to steamers generally—engines are steel, boilers are steel, the hulls are also of the metal, and the mills for the manufacture of the plates are unequalled probably in the world. Again, we have adequate supplies of fuel, and our national position disposes the materials and fuel so near to the building centers, that carriage is less in cost to the ports than in most countries. Against these advantages are to be put dear wages and some times interference of trades unions with the economic working of business; whilst our competitors have cheap labor, increasingly efficient; their building operations are aided by bounties; and the whole attempts of nations are to foster industries unfairly. There is the gain to us that on the sea the cheapest carrier is preferred, and the mercantile navy we have is still far away the most effective. Our rivals are trying to develop trade by costly liners, and it is likely to be long before they build up great fleets of the free ships that sail every ocean. It will need, however, increasing efforts on the part of shipbuilders—masters and men—and shipowners and seamen, to retain and enlarge that vast and valuable trade that we have as the great ocean carriers of the world.

We have received returns from the United States, Austria, Belgium, Norway, France, Germany, and Denmark. The output of the German yards varies from 5,000 tons to over 31,000 tons, and does not include vessels of so large a size as those of the preceding year. That factor affects the return of the Vulcan Co., of Stettin. They launched in 1896 a steamer—the Kaiser Wilhelm—of 14,349 tons, which was one of greater tonnage than all they have put off the stocks this year.

SHIPBUILDING IN FOREIGN COUNTRIES.

DESCRIPTION.	Gross tons register.	Horse-power.
France:		
Forges et Chantiers de la Mediterranean, La Seyne.	17,395	32,710
Germany:		
Flensburger Schiffsbau Gesellschaft, Flensburg...	31,457	14,250
Howaltswerke, Kiel	12,885	7,435
Act Gesells Neptun Rostock	12,304	4,900
J. C. Tecklenborg, Geestemunde	10,105	5,000
Vulcan Ship Building Co., Stettin	8,840	18,000
Reiherstieg Schiffswerfte, Hamburg	8,744	4,000
Henry Koch, Lubeck	5,955	2,735
Denmark:		
Burmeister & Wain, Limited, Copenhagen	7,395	4,270
Elsinore Ship Building Co., Elsinore	4 851	3,800
Norway:		
Fevig Jernskibsbyggerl, Arendal	3,931	2,480
Bergen Mekaniske Værkstadt, Bergen.	3,056	1,650
Akers Mek. Werkstadt, Christiania	2,063	2,185
Trondhjems Mek, Værkstadt, Drontheim	1,207	1,280
Stavanger Stoberi and Dok Co., Stavanger	469	390
Austria:		
Stabilimento Tecnico, Trieste	10,342	15,920
United States:		
Union Iron Works, San Francisco	21,144	39,500
Harlan & Hollingsworth Co., Wilmington.		35,200
Delaware River Ship Building Co., Chester	11,391	10,650
Globe Iron Works, Cleveland	*9,941	7,500

*In addition to the government tonnage.

Belgium.—Societe John Cockerill Seraing. A return sent us by the famous Belgian firm does not give tonnage, but shows that it has launched ten vessels in the year—stern-wheel steamers for the Kongo chiefly—varying in length from about 27 feet up to 147, and in indicated horse-power from 52 up to 220. In addition, pontoons and elevators have been built and other work carried out. All the steamers were of steel.

VISIBLE SUPPLY OF GRAIN

As compiled for The Marine Record, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Buffalo	716,000	....	.....	20,000	297,000
Chicago	4,693,000	12,000,000	1,443,000	416,000	813,000
Detroit	329,000	400,000	5,000	4,000	9,000
Duluth and Superior	10,670,000	5,569,000	2,080,000	305,000	485,000
Milwaukee	44,000	1,000	4,000	3,000	105,000
Montreal	21,000	17,000	506,000	3,000	7,000
Oswego	.....	.....	.....	.....	.....
Toledo	315,000	690,000	149,000	2,000	.....
Toronto	55,000	.....	16,000	.....	20,000
Grand Total	30,431,000	31,861,000	11,283,000	1,449,000	2,035,000
Corresponding Date, 1898	30,129,000	40,100,000	13,540,000	3,511,000	1,137,000
Increase	444,000	.....	154,000	.....	.....
Decrease	.....	876,000	.....	18,000	195,000

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific Slope.

AT the meeting of representatives of the Canadian Marine Engineers' Associations, of Toronto, Vancouver, B. C., and St. John, N. B., last month, in Toronto, it was unanimously decided to amalgamate the three distinct societies. About 60 delegates were present, and the chair was occupied by Harry Parker, president of the Toronto organization. At a meeting held in the morning of the visiting delegates a report was drawn up and plans agreed upon for presentation before all the members. After three hours' discussion the entire meeting agreed on an amalgamation. Harry Parker, S. G. Mills and Robert Craig were appointed an executive committee, to meet in Montreal next autumn, and arrange a new constitution for the organization. The name will hereafter be the National Association of Canadian Marine Engineers, and it at present boasts of a membership of 350. Branches will also be instituted in Kingston and Montreal. The meeting then adjourned.

LIQUID FUEL.*

(CONTINUED FROM LAST WEEK.)

An enormous future lies before this fuel, even if it only depended on its relative cost compared with coal; but when we come to the collateral advantages it enjoys, the benefit of using it, as compared with coal, are simply overwhelming. It is unfortunate that it should be so, but one cannot fail to recognize the fact that the calls for purposes of war must take priority to those of peace, and the first great advantage to vessels of war, especially to torpedo boats, in using liquid fuel, as compared with even the best coal, is the entire absence of smoke arising from its employment. When combustion is complete—and this is very important, engineers having not yet found out how to handle fuel, and complete combustion does not take place and smoke is caused—not a trace of smoke issues from the funnel of a vessel using it. How important this is to torpedo boats, the least initiated can understand, but it is not less so to cruisers, or even to battle-ships, which, when using liquid fuel, could shadow an enemy's fleet without being detected. Under the system adopted in the Haliotis, steam is used to spray the oil, but this is certainly not the most economical method, and already a system has been found, invented by a Dutchman, called the Kloos system, which entirely dispenses with the use of steam. One main point of difference between the burning of coal and liquid fuel is that, while coal remains quietly in its place until it is burnt, liquid fuel would offer too small a surface to the air when lying in a tank to burn with so much heat as is required. It has, therefore, to be sprayed out in small particles, to augment its surface. If, however, the oil is sprayed mechanically, the rush of cold air chills the spray, and many of the small drops reach the funnel before combustion has taken place, thus producing smoke and soot. By heating the air well above the burning temperature of the oil, before it reaches the spray, this is remedied, and combustion takes place freely. In the heated air system, the oil is forced at about 50 lbs. pressure through a Korting's Sprayer into the furnace. In this sprayer the current of oil has to pass through a screw thread, which gives a rapid turning motion to it, so that the centrifugal force causes the liquid to fly out in dust. The air is brought by a guiding plate at the back of the furnace, returns along cast-iron ribbed plates which are heated by the flames above it, and meets rectangularly the current of fine sprayed-out oil, the air being heated to about 500 degrees Fahr. As the hole in the sprayer through which the oil is injected is under 1-16th of an inch in diameter, the liquid must be well filtered, and to assist the centrifugal force in spraying it out in fine particles, the oil is heated to about 200 degrees Fahr.

*Paper read by Sir Marcus Samuel, Society of Arts, London.

None but those concerned in the actual management of steamers know what trouble and anxiety arises from the employment of what is known as the "black element," namely, the stokers. By the use of liquid fuel the services of these men are almost entirely dispensed with, because oil flows by gravitation from service tanks placed well above the boilers, direct to the furnaces. The expansion and contraction caused by the frequent opening of the furnace doors is entirely avoided, and the life of a boiler, consequently, greatly prolonged. No ashes are made, and the strain and distress to firemen of heaving these overboard before commencing their watch is entirely saved. To anyone who has seen the manner in which the large crew needed on a torpedo-boat or destroyer are berthed, in consequence of having to stoke the enormous boilers used upon these craft, the fact that under the use of liquid fuel the crews of these vessels can be reduced to less than half of those now necessary is, in itself, an argument so overwhelming that, were this its only advantage, it would suffice to compel its introduction into this class of vessel by those in power; but when it is borne in mind that men in torpedo craft literally carry their lives in their hands, depending solely on the speed of the vessel, and not upon her armament, it is clear that a great step is attained when the crew carried upon these vessels is reduced. Oil can be carried in spaces which it is impossible to utilize in any other way, and especially in such craft as torpedo-boats, where the form of the vessel under water renders the attaining of stability a difficult problem. Oil carried in the bottom of the steamer, below the water-line, would be impervious to shot, and, by the system of service tanks, as oil is pumped out of the ballast-tanks of a steamer, water can readily be taken in to replace it, because if the mixture is put into a service tank, and allowed to settle, water is quickly precipitated to the bottom, and can be drawn off, the oil remaining being pumped pure into the second service tank, whence it flows to the bunkers, and it can readily be conceived how many spaces now lost in vessels can be utilized for the storage of oil, allowing a much greater weight for armament or quantity of cargo to be carried in space now used for bunker purposes only, or lost entirely through being too small or inaccessible for the storage of coal.

The importance of the new departure has been promptly recognized by Lloyd's, which, I am glad to say, has issued regulations allowing liquid fuel, having a flash point of over 200° Fahr. to be carried in steamers' ballast tanks, and this will greatly facilitate its general use. The much longer time a vessel can be kept at sea is also a factor which must not be overlooked, and, provided relays of supplies are furnished at ports not too far apart, the carrying capacity of an ordinary merchantman is increased by some hundreds of tons, dependent necessarily on the size of the vessel, whilst the saving in time in taking in oil instead of coal as bunkers can be best estimated when I state that oil can be easily put on board at the rate of 300 tons per hour, and this without the slightest dirt—a great characteristic of the Borneo oil being, too, that it is almost odorless.

The experimental stage in the burning of liquid fuel, as stated at the commencement of this paper, has long since been passed. The uses for it in Russia itself are innumerable, and the latest statistics show that no less than 7,000,000 tons per annum are consumed in Russia for liquid fuel alone. Lately it has been largely adopted for naval purposes as well, while for many years the steamers navigating the Caspian Sea have used it exclusively. There are no less than eight steamers at present engaged in the eastern trade which are fitted for it, and where the results attained have answered the expectations of their owners beyond their most sanguine anticipations, whilst large numbers of vessels are under construction expressly for the use of liquid fuel, and a great number of steamers hitherto burning coal are also being altered.

In the Far East tanks have been erected at ports ranging from Yokohama to Suez, including all the Indian ports, while cargoes of the Borneo oil have also been landed at the principal ports. Under the advantages which I have enumerated it will be understood that it is rapidly going into general consumption. In Europe the Russian, the Italian, and the German navies have partially adopted it, and it will be a curious circumstance, if, with the great engineering skill available in the British Navy, they should not also see their way to use it to advantage in the immediate future.

VESSELS CLASSED.

Vessels classed and rated by the American Bureau of Shipping in the "Record of American and Foreign Shipping," this week, are as follows: American tern, Geo. V. Jordan; bark, Grace Deering; bark, Nellie Brett; bark, Penobscot. British barkentine Alberta, owned by Messrs. Reynard & McBride, and British schooner Priscilla. American barkentine, Nellie M. Slade; ships, Paul Revere and Gov. Robie.

THE British government draws its naval reserves from the fishermen and seamen of the coast towns. At the beginning of the war with Spain Englishmen could not believe that the American naval reserves from Illinois, Michigan, Ohio, and other interior states could do efficient service on a war vessel. It so happened that the naval reserves and recruits from the interior states saw more active service than the reserves from the coast states. On the Oregon, Iowa and other vessels they did their duty "as men among men," receiving the praise of officers and veteran gunners and seamen.

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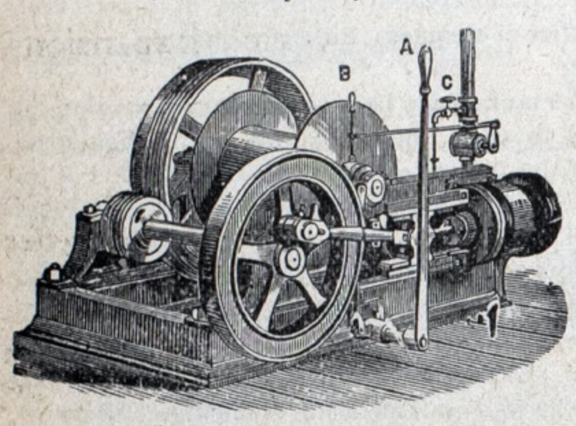

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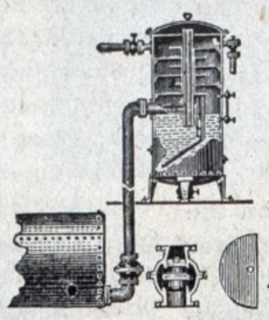

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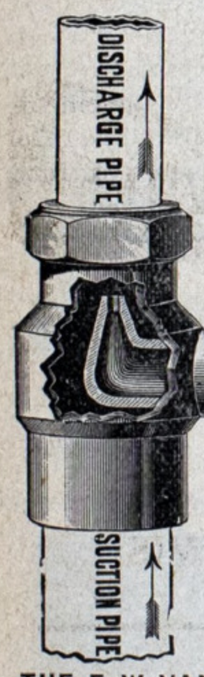

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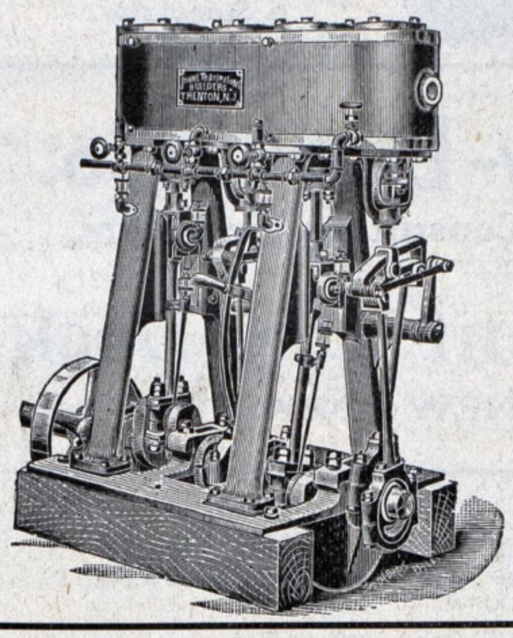

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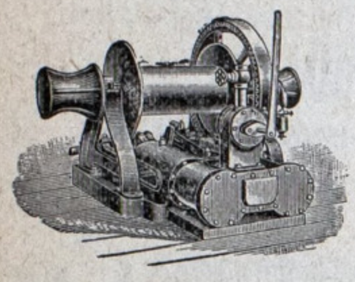

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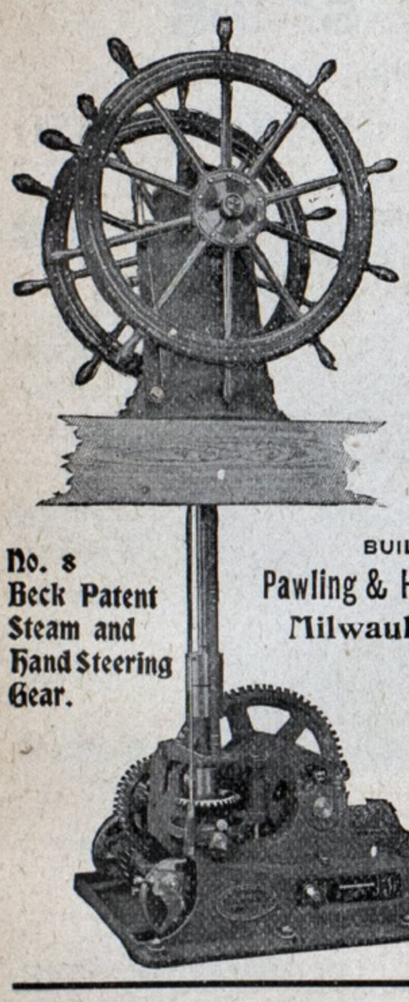

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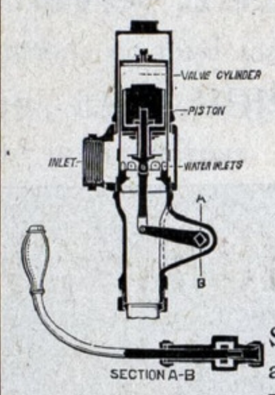

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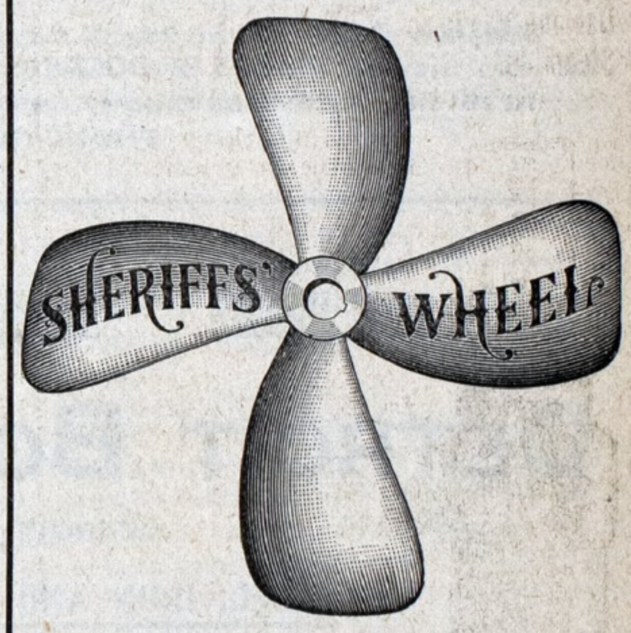

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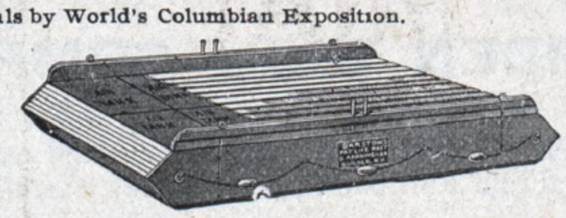

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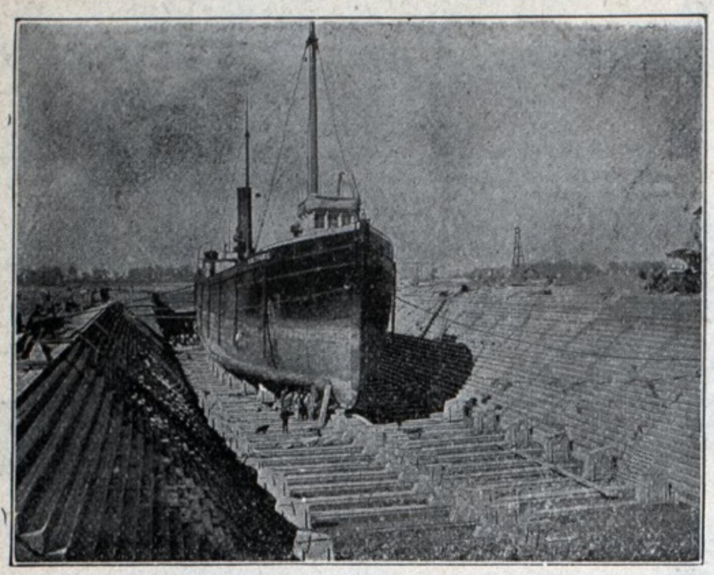

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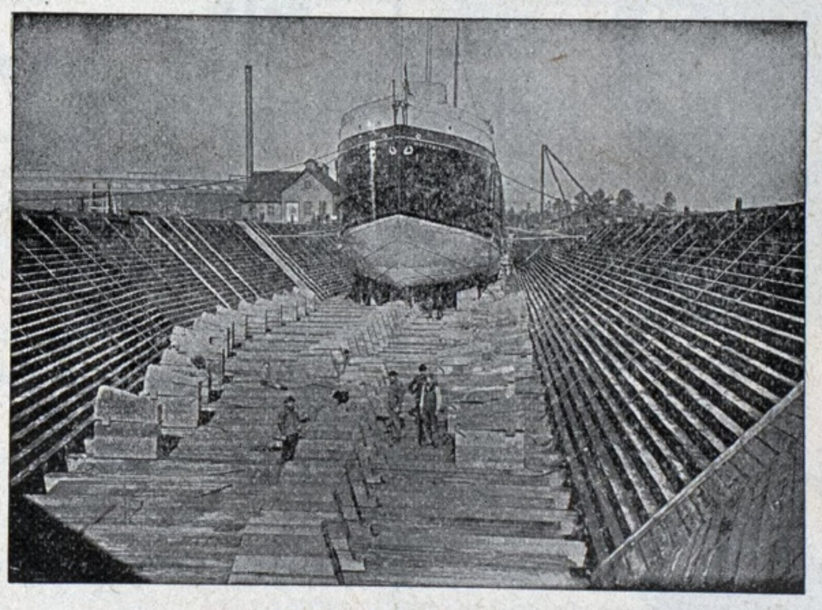

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